

Appendix

1. An object having an associated authentication marker comprising:
an object having a first surface;
an authentication marker disposed on said first surface of said object;
said authentication marker comprising:
an electrophoretic display medium having a display state, a first surface, a second surface, and a plurality of electrophoretic particles disposed between said first and second surfaces; and
a first electrode disposed adjacent said first surface of said electrophoretic display;
wherein said display state changes as a result of movement by said electrophoretic particles in response to an electric field applied through said first electrode and to said display medium.
2. The object of claim 1 further comprising a second electrode disposed adjacent to said second surface of said electrophoretic display medium
3. The object of claim 2 wherein at least one of said first electrode and said second electrode is disposed in a pattern forming text.
4. The object of claim 2 wherein at least one of said first electrode and said second electrode is disposed in a pattern forming an image.
5. The object of claim 2 wherein at least one of said first electrode and said second electrode is substantially clear.
6. The object of claim 2 wherein said electrical signal comprises an electrical field applied between said first electrode and said second electrode.
7. The object of claim 1 wherein said electrophoretic display medium is disposed in a pattern forming text.

8. The object of claim 1 wherein said electrophoretic display medium is disposed in a pattern forming an image.
9. The object of claim 1 wherein said electrophoretic display medium comprises at least one microencapsulated electrophoretic particle.
10. The object of claim 1 wherein said display state is an optical property.
11. The object of claim 10 wherein said change in said display state comprises a change to a substantially transparent optical property.
12. The object of claim 10 wherein said change in said display state comprises a change to a substantially opaque optical property.
13. The object of claim 1 wherein said display state is an impedance.
14. The object of claim 1 wherein said change in said display state comprises a change to reveal text obscured by said electrophoretic display medium.
15. The object of claim 1 wherein said change in said display state comprises a change to reveal an image obscured by said electrophoretic display medium.
16. The object of claim 1 wherein said electrophoretic display medium is disposed on said first electrode.
17. The object of claim 16 wherein said first electrode is a conductive substrate.
18. The object of claim 1 wherein said object is selected from the group consisting of currency, stock certificates, bond certificates, negotiable instruments, debit cards, credit cards, and smart cards.
19. The object of claim 1 wherein said authentication marker is affixed to said first surface of said object.
20. The object of claim 1 further comprising a second electrode adapted to interact with said authentication marker wherein said display state changes in response to an electrical signal communicated between said first electrode and said second electrode.

21. The object of claim 20 wherein said second electrode is an electrostatic head.
22. The object of claim 20 wherein said second electrode is a charged stylus.
23. The object of claim 20 wherein said second electrode is in communication with a validation machine.
24. The object of claim 1 further comprising a timer in communication with said authentication marker.
25. An authentication marker for association with an object, said authentication marker comprising:
 - an electrophoretic display medium having a display state, a first surface, a second surface, and a plurality of electrophoretic particles disposed between said first and second surfaces; and
 - a first electrode disposed adjacent said second surface;

wherein said display state changes as a result of movement by said electrophoretic particles in response to an electric field applied through said first electrode to said display medium.
26. A secure document comprising:
 - a conductive substrate having a surface and having a message disposed on said surface; and
 - an electrophoretic display medium comprising a plurality of electrophoretic particles, said display medium having a first display state and a second display state and being disposed adjacent said conductive substrate;

wherein said first display state changes to reveal said message as a result of movement by said electrophoretic particles in response to a first electrical signal communicated to said conductive substrate, and said second display state changes to obscure said message in response to a second electrical signal communicated to said conductive substrate.
27. The secure document of claim 26 wherein said message comprises text.

28. The secure document of claim 26 wherein said message comprises an image.
29. The secure document of claim 26 wherein said electrophoretic display medium comprises at least one microencapsulated electrophoretic particle.
30. A secure document comprising:
 - a substrate having a surface and having a message disposed on said surface;
 - an electrophoretic display medium comprising a plurality of electrophoretic particles, said display medium having a first display state and a second display state and being disposed adjacent said substrate; and
 - a first electrode disposed adjacent said electrophoretic display medium; wherein said first display state changes to reveal said message as a result of movement by said electrophoretic particles in response to a first electrical signal communicated to said first electrode, and said second display state changes to obscure said message in response to a second electrical signal communicated to said first electrode.
31. The secure document of claim 30 wherein said message comprises text.
32. The secure document of claim 30 wherein said message comprises an image.
33. The secure document of claim 30 wherein said message is comprised of conductive ink.
34. The secure document of claim 33 wherein at least one of said first electrical signal and said second electrical signal comprises an electrical field applied between said first electrode and said conductive ink.
35. The secure document of claim 30 further comprising a second electrode disposed adjacent said substrate and adjacent said electrophoretic display medium.
36. The secure document of claim 35 wherein at least one of said first electrical signal and said second electrical signal comprises an electrical field applied between said first electrode and said second electrode.
37. The secure document of claim 30 further comprising a second electrode adapted to interact with said electrophoretic display medium.

38. The secure document of claim 37 wherein said second electrode is an electrostatic head.
39. The secure document of claim 37 wherein said second electrode is a charged stylus.
40. The secure document of claim 37 wherein said second electrode is in communication with a validation machine.
41. The secure document of claim 30 further comprising a timer in communication with said electrophoretic display medium.
42. The secure document of claim 30 wherein said electrophoretic display medium comprises at least one microencapsulated electrophoretic particle.
43. A method for authenticating an object comprising the steps of:
providing an object having a surface and having an authenticating marker disposed adjacent said surface, said authenticating marker comprising at least one electrode and an electrophoretic display media having a display state and a plurality of electrophoretic particles;
applying an electric field to said display media of authenticating marker to effect a change in said display state through movement of said electrophoretic particles; and
authenticating said object by said change in display state.
44. A method for securing a substrate comprising the steps of:
providing a substrate having a surface;
providing an electrophoretic display media having at least one display state and disposed adjacent said surface; said substrate and the display media forming a message, said display media comprising a plurality of electrophoretic particles;
providing at least one electrode disposed adjacent said electrophoretic display media;
applying a first electrical signal to said at least one electrode to effect movement by said electrophoretic particles to change said at least one display state to obscure said message; and
applying a second electrical signal to said at least one electrode to change said at least one display state to reveal said message.
45. A method for securing a document comprising the steps of:
providing a secure document comprising a substrate having a surface;
disposing a message on said surface, said message comprising a conductive ink;

disposing an electrophoretic display media having a display state adjacent said surface, said display media comprising a plurality of electrophoretic particles,;
providing at least one electrode adapted to interact with said secure document; and
communicating a first electrical signal between said conductive ink and said at least one electrode to effect movement by said electrophoretic particles to change said display state to shield said message.

46. A method for securing a document comprising the steps of:

providing a substrate having a surface and a message disposed on said surface;
disposing a shield on said surface, said shield comprising a first clear electrode, an electrophoretic display media having a display state and disposed on the first electrode, and a second electrode disposed adjacent the display media; and
communicating a first electrical signal between said first clear electrode and said second electrode to shield said message.

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